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(54) **ORIENTATION ILLUMINATION IN A MOTOR VEHICLE**

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(52) **U.S. Cl.** **362/490**; 362/549; 362/359; 362/361
(58) **Field of Search** 362/490, 543, 362/544, 545, 509, 351, 323, 359, 362, 488

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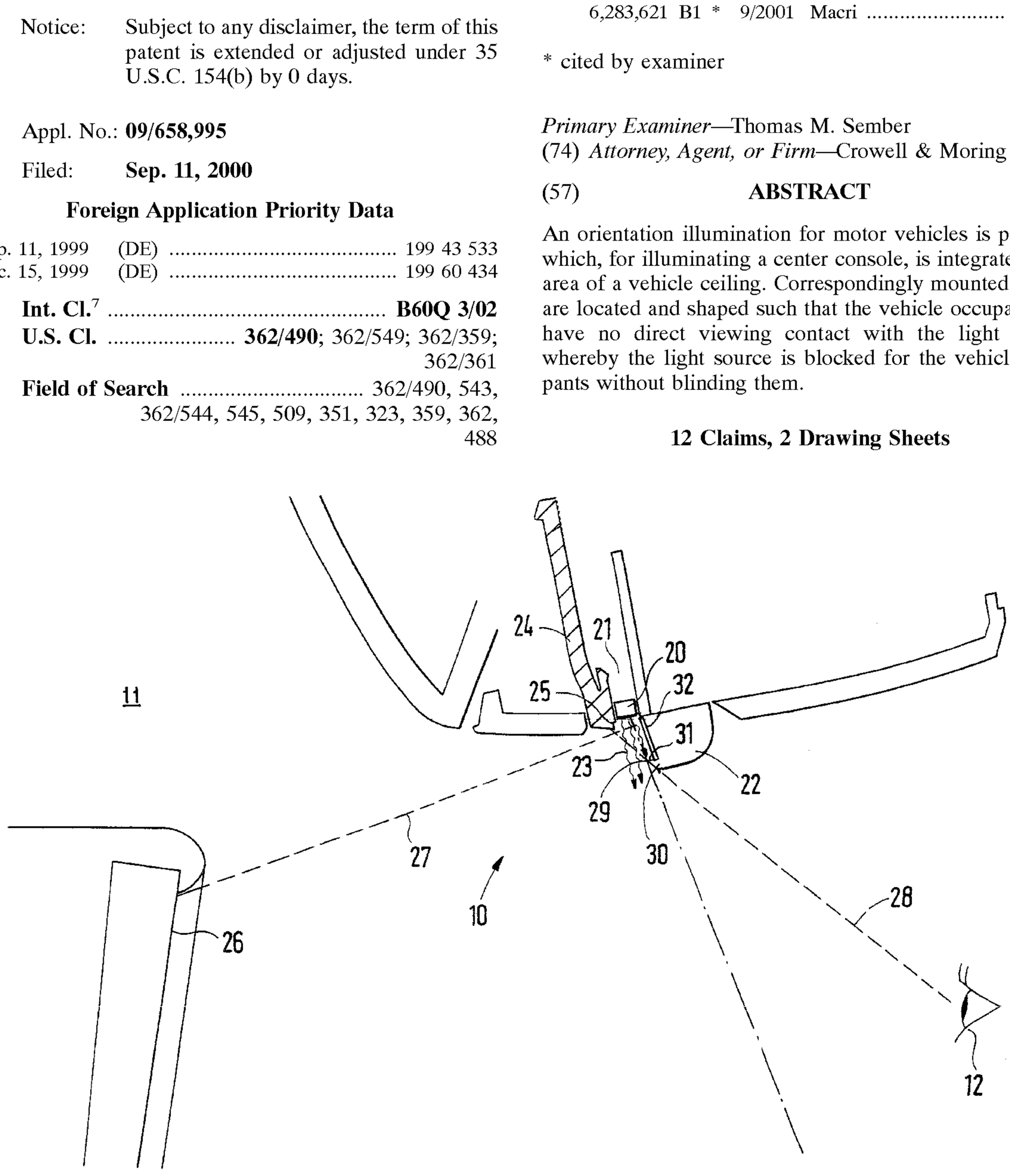
(57) **ABSTRACT**

An orientation illumination for motor vehicles is provided which, for illuminating a center console, is integrated in an area of a vehicle ceiling. Correspondingly mounted shields are located and shaped such that the vehicle occupants can have no direct viewing contact with the light source, whereby the light source is blocked for the vehicle occupants without blinding them.

12 Claims, 2 Drawing Sheets



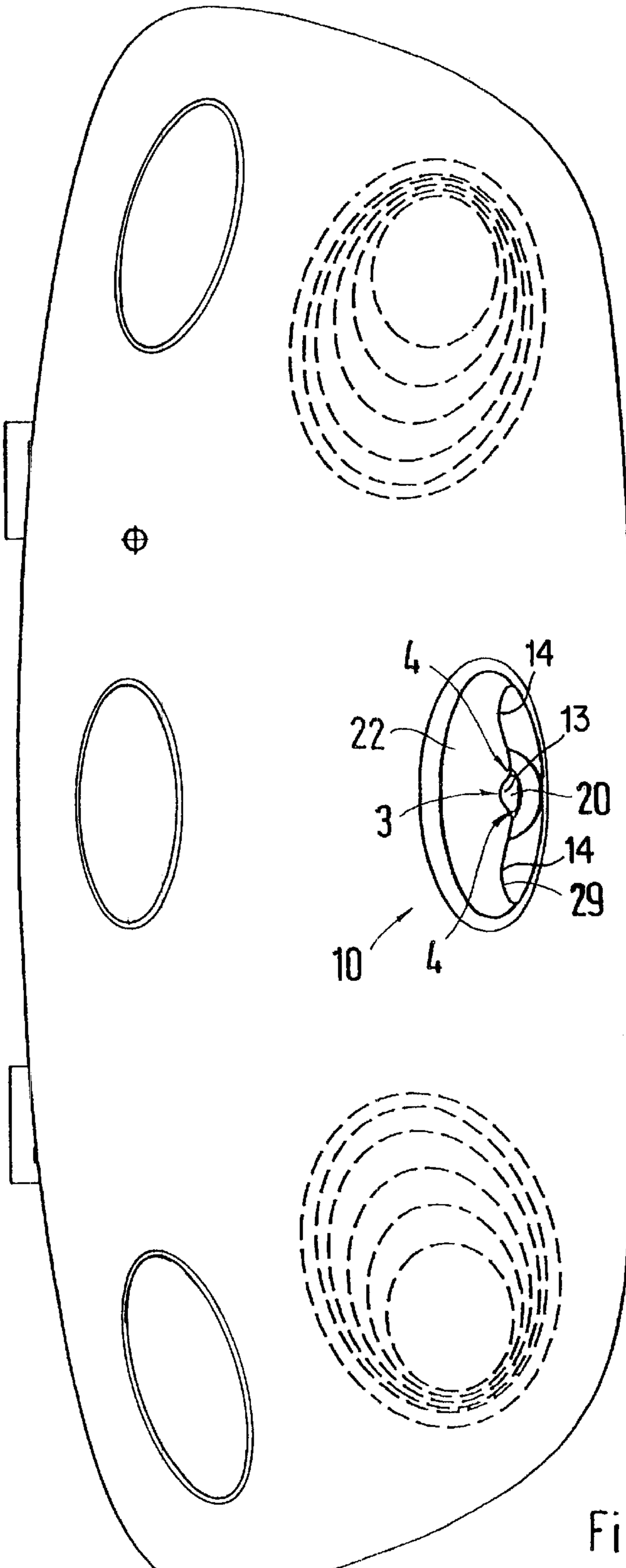


Fig.1

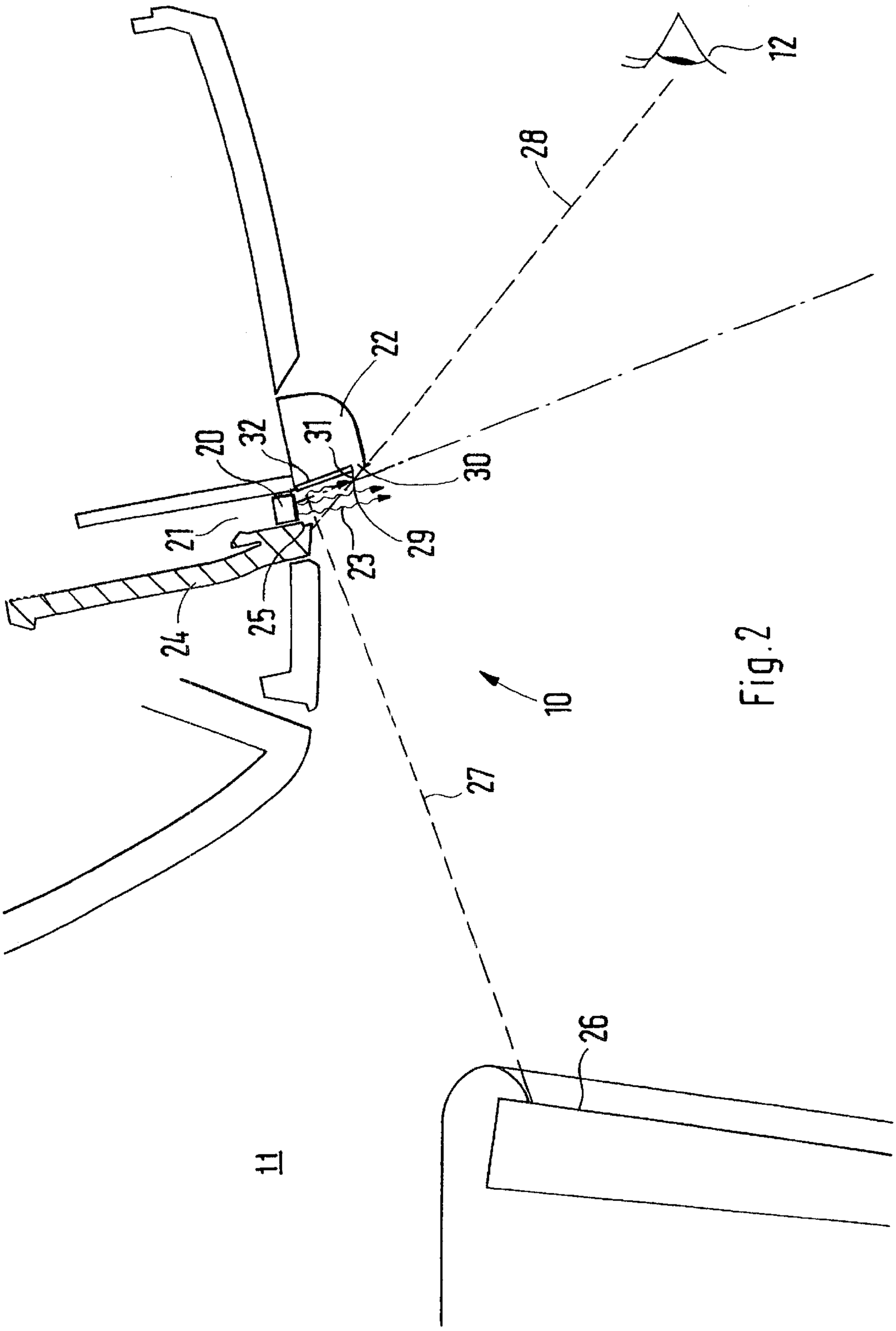


Fig. 2

ORIENTATION ILLUMINATION IN A MOTOR VEHICLE

BACKGROUND AND SUMMARY OF THE INVENTION

This application claims the priority of German patent document 199 43 533.2, filed Sep. 11, 1999, and German patent document 199 60 434.7, filed Dec. 15, 1999, the disclosures of which are expressly incorporated by reference herein.

The invention relates to an orientation illumination in a motor vehicle. In modern vehicles, a number of operating elements and depositing possibilities are integrated in the center console which, unless they carry an active illumination unit themselves, are difficult to recognize for the driver in the dark. Illumination units integrated in the ceiling are known which can optionally be switched on or off by the driver or front passenger, so that, as required, the center console is illuminated correspondingly. As an orientation illumination, small light sources are installed, for example, in the form of light-emitting diodes or lightwave outputs. The light emitted here is frequently visible by reflection on the environment of the light source, which may have a blinding effect on the vehicle occupants.

In the case of the suggested orientation illumination according to the invention, the light source, which, for illuminating the driver seat and front passenger seat as well as the center console, is integrated in the area of the vehicle ceiling, is not visible so that the occupants can neither be irritated nor blinded.

In certain preferred embodiments of the invention, the arrangement of the orientation illumination in the existing illumination unit at the vehicle ceiling has the advantage that electric contacts are already arranged and no constructive change of the electric lines or even additional lines have to be provided. The different characteristics according to the invention ensure that light sources, although arranged in the viewing area of the vehicle occupants, radiate the light without a blinding effect.

The providing of a shield with a curved contour having a recess and two convexities according to certain preferred embodiments of the invention has the advantage that, as a result of the recess in the shield, the center console is illuminated well, while, as a result of the two convexities, the driver and the front passenger have no direct viewing contact with the light source.

Another advantage is obtained by the reflective coating of an interior surface of a central shield according to certain preferred embodiments of the invention because rays of light which impinge on the reflective coating are not visible as a result of the reflection and even an indirect blinding of the vehicle occupants by way of the interior rear view mirror or for the oncoming traffic cannot occur.

By means of the shields, the shape of the illumination can also be defined and, as desired, a wide illumination cone or a narrow illumination cone can be implemented.

Other objects, advantages and novel features of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic view of a constructional unit for illumination of a vehicle interior with an integrated orientation illumination, constructed according to a preferred embodiment of the invention; and

FIG. **2** is a partially sectional view of the orientation illumination.

DETAILED DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates a constructional unit for illuminating a vehicle interior with various illumination units, such as a reading light, an entering and exiting light and an integrated orientation illumination **10** which can be turned on and off, the orientation illumination **10** being arranged here in the center on the side of the illumination unit assigned to the windshield **11**.

The construction and method of operation of the orientation illumination **10** will be explained by means of FIG. **2**. FIG. **2** is a partially sectional view of the orientation illumination **10**, the reference number **11** symbolically showing the windshield, and the reference number **12** symbolically indicating the driver or the vehicle occupants. The light source of the orientation light **10** is a light-emitting diode **20** which is arranged in a slightly set-back manner in a mounting shaft **21** and, with respect to the occupants, is covered by a first half-shell-shaped shield **22**. As a result of the set-back arranging of the light-emitting diode **20** in the mounting shaft **21**, the surfaces surrounding the light-emitting diode **20** are not illuminated, whereby they are also not visible to a viewer. The light emitted by the light-emitting diode **20** is symbolically indicated in FIG. **2** by wavy lines **23**. On the side facing the windshield **11**, the mounting shaft **21** is bounded by a second shield **24** which projects beyond the light-emitting diode **20**.

The second shield **24** projects so far beyond the light-emitting diode **20** so that the light-emitting diode is not visible to the occupants even in an indirect viewing direction **27** by way of an inside rear view mirror **26**. By means of a broken line **27**, FIG. **2** shows the indirect viewing direction which occurs as a result of the existing inside rear view mirror **26**. As illustrated in FIG. **2**, as a result of the second shield **24**, the light-emitting diode is also not visible to the driver from this direction.

The section of the second shield **24** which projects beyond the light-emitting diode **20** may optionally have a recess **25**, as illustrated in FIG. **2**. The recess **25**—in this case, the wall thickness of the second shield **24** being reduced in the area, is dimensioned and arranged such that the light emitted by the light-emitting diode and thus the rays of light **23** do not impinge on the second shield **24**. This recess **25** can be eliminated if the first shield **22** is dimensioned such that the critical area of the second shield **24** and the light-emitting diode **20** are visible to the occupants neither in the direct viewing direction **28**, nor in the indirect viewing direction **27**.

The first half-shell-shaped shield **22** is designed such that the light source **20** is not visible to the occupants whose direct viewing direction is indicated by the broken line **28**. For an optimal shielding of the light-emitting diode for avoiding a direct viewing contact by the driver with the light source and simultaneously for a sufficient illumination, the shell-shaped first shield **22** is correspondingly developed in the area of the edge **29** pointing away or facing away from the vehicle occupants. The edge **29** has a tapering design and will be called a point **30** in the following. The point **30** ensures that, independently of the size of the driver or front passenger, the light-emitting diode **20** will not be directly visible. In the cross-sectional view, the edge **29** with the point **30** can be easily recognized, and it is demonstrated that

the light of the light-emitting diode **20** shines only onto the side **31** of the point **30** facing the light-emitting diode **20**, which side **31**, in turn, is sloped such that is also not visible to the vehicle occupants in the indirect viewing direction.

The interior surface **32**, which is not directly visible to the vehicle occupant and is sloped in the direction of the indirect viewing direction, is provided with a reflective coating, in which case mirror glass can be used here, or this interior surface **32** is provided with a reflective coating by means of a reflective foil. As a result of the reflective coating of the interior surface **32**, light, which impinges on this interior surface from the light-emitting diode **20**, is not visible here and remains invisible to the occupant of the vehicle and can be used for an additional illumination. The interior surface **32** provided with the reflective coating is also not visible to the vehicle occupants by the indirect viewing contact **27**, because the reflection angle of the visible rays shows the interior surface **32** with the reflective coating only as a dark surface.

Finally, by means of FIG. **1**, the edge **29** of the first shell-shaped shield **22** which faces away from the vehicle occupants will be described in detail. FIG. **1** shows that the forward edge **29** has a curved contour which has a type of recess **13** in the center area. This recess **13** provides an optimal illumination of the center console because the light of the light-emitting diode **22** can better exit here in the downward direction. On both sides of these recesses **13**, the contour of the forward edge **29** is pulled toward the front so that two arcs **14** are formed. This arrangement of recesses **13** and **14** provides the illumination of the center console while simultaneously shielding the driver and the front passenger.

The foregoing disclosure has been set forth merely to illustrate the invention and is not intended to be limiting. Since modifications of the disclosed embodiments incorporating the spirit and substance of the invention may occur to persons skilled in the art, the invention should be construed to include everything within the scope of the appended claims and equivalents thereof.

What is claimed is:

1. Orientation illumination for a vehicle, which is integrated in a form of a light source of a light-emitting diode in a ceiling of a vehicle and which is not directly visible to vehicle occupants as a result of shields and a corresponding arrangement of said shields, comprising a half-shell-shaped shield being arranged on a side of the orientation illumination facing the vehicle occupants, said half-shell-shaped shield tapering to a point on an edge pointing away from the vehicle occupants,

wherein the light-emitting diode is inserted in a mounting shaft in a slightly set-back manner, and on the side facing away from the vehicle occupants, the mounting shaft is pulled forward to form a shield with respect to the light-emitting diode to such an extent that the light-emitting diode does not reflect in an inside rear view mirror and therefore no indirect viewing contact by the vehicle occupants exists with the light-emitting diode.

2. Orientation illumination according to claim **1**, wherein the edge has a curved contour which includes at least a recess and two pulled-forward arcs.

3. Orientation illumination according to claim **2**, wherein the half-shell-shaped shield is provided with a reflective coating on an interior surface facing the light-emitting diode.

4. Orientation illumination according to claim **3**, wherein the surface with the reflective coating is produced by a reflective foil.

5. Orientation illumination according to claim **1**, wherein the half-shell-shaped shield is provided with a reflective coating on an interior surface facing the light-emitting diode.

6. Orientation illumination according to claim **5**, wherein the surface with the reflective coating is produced by a reflective foil.

7. Orientation illumination according to claim **1**, wherein a half-shell-shaped shield is provided with a reflective coating on an interior surface facing the light-emitting diode.

8. Orientation illumination according to claim **7**, wherein the surface with the reflective coating is produced by a reflective foil.

9. Orientation illumination unit for a vehicle occupant space of a vehicle having a ceiling, a forward facing occupant seat and a windshield in front of the seat below the ceiling, said illumination unit comprising:

a light-emitting diode disposed in the ceiling, and

light shields extending from the ceiling inwardly into the occupant space, said light shields being configured to prevent direct viewing of light from the diode by an occupant in a normal position in said seat,

wherein the light shields include a half-shell-shaped shield arranged on a side of the orientation illumination facing the vehicle occupant, and said half-shell-shaped shield tapers to a point on an edge pointing away from the vehicle occupant, and

wherein the light-emitting diode is inserted in a mounting shaft in a slightly set-back manner, and on the side facing away from the vehicle occupant, the mounting shaft is pulled forward to form a shield with respect to the lightemitting diode to such an extent that the light-emitting diode does not reflect in an inside rear view mirror and therefore no indirect viewing contact by the vehicle occupants exists with the light-emitting diode.

10. Orientation illumination according to claim **9**, wherein the edge has a curved contour which includes at least a recess and two pulled-forward arcs.

11. Orientation illumination according to claim **9**, wherein the half-shell-shaped shield is provided with a reflective coating on an interior surface facing the light-emitting diode.

12. Orientation illumination according to claim **11**, wherein the surface with the reflective coating is produced by a reflective foil.

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